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INTELLIGENCE - ESPIONAGE / LEV NAVROZOV FILE ONLY

'CIA' Really Stands for 'Central Inspection Agency'

First of a series

I have said repeatedly that "I" in CIA stands for "Inspection" (that is, data collection of which the Soviet rulers are aware and against which they develop especially successful measures of concealment and deception) and not for "Intelligence" (that is, collection — of which the Soviet rulers are not aware — of data they "deny").

For example, the space-satellite photography of Gorbachev's Russia is inspection, not intelligence, since the Soviet military have been fully aware of it right from the start, never have objected to it since 1963 and have been developing counter-measures such as strategic camouflage.

The CIA has been so mysterious about its means of inspection (in order to misrepresent it as clandestine intelligence-espionage) that while the Europeans — not to mention Soviet intelligence — know all about them, the U.S. government, Congress and public have been kept in the mysterious dark, replete with tales of the CIA's miracles such as its ability to read the masthead of *Pravda* on space photographs (though not yet the text itself).

Unpleasant as it may sound to the mysterious CIA and the rest of the intelligence (that is, inspection) community, it is unmysterious optical photography — just the kind of photography we all know — that has the best resolution of all methods of image perception.

What is "resolution?" The thickness of an "i" or a "t" in the masthead of the *New York City Tribune* is about ⅛ inch, and so is the space between letters. So to be able to read the masthead, the resolution must be better than — that is, less than — ⅛ inch or it will be seen as a blur.

The high speed of a satellite in orbit will cause it to burn if it comes too close to the earth; its *closest* approach has so far been 80 miles.

Space Telescope Upside-Down

Every amateur photographer knows how resolution drops with distance. In astronomy, the answer is the 43-foot satellite Space Telescope — the world's greatest state-of-the-art project in telescopic photography, raising man's eyes above the atmosphere to see the stars without its interference.

A similar telescopic photo satellite, such as the U.S. 46-foot Black Bird, goes up to look down at Gorbachev's Russia — alas, *through* the atmosphere.

Thus, we know the maximum resolution of the telescopic photo satellite looking down through the atmosphere — since we know the maximum resolution of telescopic photography from the earth up through the atmosphere. No matter what telescopic cameras the Central Inspection Agency (CIA) may order in the future, it won't be able to remove the atmosphere through which it has to photograph objects on earth.

But before going over to this maximum resolution, let me discuss another problem.

A satellite carrying a camera with the resolution of the Space Telescope at a height of 125 miles can photograph on 9-inch-wide film an area only half a mile wide. So, in order to photograph the whole territory of Russia in 9 X 9-inch frames the camera has to make 35 million shots.

> "No matter what telescopic cameras the Central Inspection Agency may order in the future, it won't be able to remove the atmosphere through which it has to photograph objects on earth."

If one photo-interpreter can study one such photograph per hour, and the territory of Russia is photographed daily, in order to see all the changes and movements at least once a day the job will require about 1 million photo-interpreters.

Now, what will they see?

There is no need to encumber our readers with the maximum resolution formula for photography through the atmosphere. A state-of-the-art space photograph obtained by the U.S. intelligence (read: inspection) community, led by the CIA, was published for the first (and last) time in the British *Jane's Defence Weekly* of Aug. 11, 1983.

The American contributor was put on trial in the United States and sentenced to a term in prison.

There was nothing new to the KGB-GRU in this photograph. If a better one is impossible to obtain because of the atmosphere, I doubt that Soviet space photography produces worse photographs, relying as it does on the photographic technology of East Germany (once the world's best), West Germany, Japan — and (through espionage, if necessary) these United States. The best album of civilian space photographs at the New York Public Library is Soviet, and I have never noticed that Soviet military products are inferior to civilian ones.

But the *Jane's* photograph was an eye-opener for the American public, and *that* was evidently outrageous for the intelligence (inspection) community — the fellow fully deserves his sentence, from that point of view. It showed a resolution of no better than 3 feet.

That brings me to the crucial point of this column. "Look at those blurred dots," I may say to the CIA — and here the CIA will wipe me out in 10 seconds. "Dots? So they seem to you. But our experts will tell you that these are Soviet supply dumps. You see dots, while we see the Soviet armed forces."

Well, I have prepared myself for such a case with the *Reconnaissance Handy Book* of McDonnell Douglas Corp., which gives the resolutions required to (1) detect, (2) identify in general, (3) identify precisely, (4) describe and (5) analyze an object in a space photograph.

With a 3-foot resolution, a photo-interpreter can only "detect" as dots Soviet supply dumps or vehicles; he cannot identify them even in general. He cannot "identify precisely" troop units, rockets and artillery, aircraft, command and control headquarters, SS/SA missile sites or even surface ships!

He can "describe" nothing except ports or harbors, landing beaches and railroad yards — and he can "analyze" nothing at all. Even the analysis of a railroad yard requires a resolution of 2 feet, not 3.

A camera aboard an aircraft flying at 1,000 feet has a 700-times-better resolution than the same camera aboard a satellite 125 miles up. Yet during World War II, with aircraft flying at 1,000 feet, there was much successful camouflage.

Well, it would be unfair to use camouflage even at the World War II level against U.S. space optical photo cameras. What camouflage? The poor "eyes-in-the-sky" or "spies-in-the-sky" can see hardly anything *without* camouflage.

When all this was presented to the late leader Nikita S. Khrushchev in 1963, he allowed U.S. "eyes/spies in the sky" over his Russia — especially since the Soviets can knock them out any time, just as well as all means of inspection, and then the United States will go totally blind.

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The CIA's 'Central Inspection Agency' (Contd.)

Part 2 of a series

My previous column demonstrated that the most important means of the CIA's inspection — telescopic visible-light space satellite photography — has very limited capabilities, since it can barely detect, say, Soviet supply dumps or vehicles, as blurred dots.

Thus, the CIA's inspection is pathetic even without Soviet camouflage, since in contrast to intelligence-espionage, inspection is the kind of data collection of which the other side is fully aware.

Short infrared waves

The CIA's next most important method of inspection is space telescopic infrared detection and imaging, including space satellite photography in short infrared waves.

When I spoke in the previous column about visible-light space photography, I didn't mention the fact that even those pathetic blurred dots can be obtained only in the daytime on clear days. No clouds or fog please.

There is a myth that photography in short infrared waves is free from these defects.

Again, the myth has survived because the U.S. Intelligence (Inspection!) Community has never shown the American public any space photographs.

Actually, photographs in short infrared waves taken on a hazy day may show distant objects a little bit more clearly than visible-light photographs, but they also need daytime sunlight and relatively clear days.

Another presumed advantage is that short infrared waves "expose camouflage." If a military object is camouflaged with cut-off tree branches, visible-light photographs will take the branches for real, but infrareds will show that the tree branches are cut-off and hence somewhat wilted.

This would be a great occasion for rejoicing if the Soviet military had never heard of infrared waves, and then the CIA's inspection were not inspection, but intelligence-espionage, since the other side would be unaware of being photographed in short infrared waves.

Universal Training

Alas, Soviet military training is universal and begins in childhood: even tots of 4 to 6 march and sing military songs. The Soviet high school is full of war-oriented sciences: calculus, physics, organic and inorganic chemistry, biology, astronomy, etc. Hence not only every Soviet sergeant, but even every Soviet high-school pupil knows that infrareds are sensitive to chlorophyl, contained in living foliage, and hence can distinguish it from wilted branches.

In fact, the cheapest Soviet camouflage is to hide military objects inside a real thick living forest, full of natural chlorophyl (though of course, synthetic chlorophyl can be used as well).

During World War II, Soviet troops bent and tied together tree tops. In this way, a military object was hidden under a dome of living leafage. This is practically costless camouflage against space photography, since the latter cannot, with its three-feet resolution, detect separate tree tops, but perceives only masses of foliage full of chlorophyl.

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Long infrared waves

Long infrared waves are not reflected sunlight, as are short infrared waves, but are emitted by warm objects and hence are often called "thermal".

They cannot be photographed, and they are detected by a mosaic of semiconductor cells which "image" a warm object. They can image it without sunlight, that is, at night, but the best thermal infrared imagery has resolutions about 100 times (!) poorer than the best visible-light space photograph, which cannot detect Soviet supply dumps or vehicles except as blurred dots.

In 1982 it was reported that an infrared telescope carried by the U.S. space shuttle and looking down at the earth would provide from an altitude of 125 miles a 66-foot ground resolution. In other words, a warm object which is 66 feet long will be detected as a shapeless blur.

Besides, some currents in the atmosphere are warm, while others may absorb thermal infrared radiation from objects of interest on the ground.

Another perceived advantage of photography in short infrared waves is that it has a high sensitivity of thermal detection (temperature differences of only 0.005°C can be detected). Yes, but imagine what havoc is wrought, owing to this sensitivity, by the atmosphere, which is a 125-mile-thick ocean of turbulent streams with temperatures differing by many degrees, not just several thousandths of one degree.

Soviet infrared camouflage

If the Soviet war-machine had never heard of thermal infrared waves either, the U.S. intelligence community could gain valuable intelligence-espionage data. But what's the sad reality?

We can evaluate the scale of Soviet top secret infrared studies by the scale of Soviet open (unclassified) infrared research.

Let us take just one subfield of thermal infrared research: semiconductor cells detecting infrared waves. In that subfield, let us take a subsubfield: three detectors (HgCdTe, PbSnTe and InSb).

An amazing panorama will unfold to our view: ten Soviet research institutions have been doing open HgCdTe research, 13 open PbSnTe research and 21 open InSb research. Openly published studies in this subsubfield available in the West exceed 400.

If such an immense effort is being made to detect infrared waves, a commensurate effort is obviously being made to produce them for infrared decoys, shams and dummies, to conceal them, and to distort them.

While objects can be heated, they can be cooled too. Low-temperature screens can be interposed between high-temperature sources and infrared cameras in space. High-temperature currents can be emitted into the atmosphere or directed at infrared cameras.

Finally, at the most strategically convenient moment for them, the Soviet military may knock out all U.S. satellites, with infrared cameras and all.

That's another disadvantage of inspection, compared with intelligence-espionage. In contrast to the latter, inspection can always be discontinued by the Soviets, allowing inspection only when it serves their purpose and blinding the United States at all other times.